

steel poles are sustainable!

The government takes touchable steps towards a sustainable society and takes a leading position: *sustainable procurement*. Quite regularly the following question is asked: *does a steel pole fit into the policy of sustainable procurement?* The answer to this question is: *a steel pole is extremely sustainable and fits completely into the cradle-to-cradle concept*. This means that condemned steel poles contribute to the chain of raw materials for a new generation of steel poles after being recycled.



our steel poles are sustainable due to the following reasons:

1. initial production of steel is characterized by favorable energy usage
2. steel poles are 100% recyclable (cradle-to-cradle)
3. a hot dip galvanized pole has a maintenance free life span of 40 years
4. steel poles have very favorable characteristics towards fatiguing
5. a well preserved steel pole has an almost infinite life span
6. zinc is not (!) harmful to people and environment
7. PMF produces its steel poles in a climate neutral way

On the following pages aforesaid characteristics are deepened. On the last page some extra interesting information concerning the characteristics of steel are mentioned.



initial production of steel is characterized by favorable energy usage

In this case the energy usage of steel is compared to producing aluminum out of bauxite. The production process of aluminum demands a huge amount of energy. Aluminum can be recycled with very little energy. After the initial production of steel and aluminum, the material is used and remelted four times into new material, and still the total energy usage for producing steel is lower.

steel poles are 100% recyclable (cradle-to-cradle)

A steel pole can be fully recycled. After your old poles are removed as scrap, the metals are melted into new raw materials. With hot dip galvanized poles the layer of zinc gets separated from the steel. After this process both materials are recycled separately.

a hot dip galvanized pole has a maintenance free life span of 40 years

This life span of 40 years is mentioned in SenterNovems (State Institute for Sustainability and Innovation) criteria for sustainable procurement of public lighting. These criteria are established for the Ministry of Housing, Spatial Planning and the Environment (VROM). The life span of a hot dip galvanized steel pole which has been powder coated is estimated at 50 years. Nevertheless SenterNovem remarks correctly that practical experience is lacking. A hot dip galvanized pole is maintenance free. A coated pole needs to be cleaned periodically from dust and dirt as indicated in the standard guarantee provisions.



steel poles have very favorable characteristics towards fatiguing

A steel pole is insensitive towards fatiguing. Aluminum on the other hand does not have a fatiguing limit and is therefore sensitive towards fatiguing. Even the slightest load, when being executed severally, leads to fatigue breakage with aluminum poles. Fatiguing does affect the life span.

a well preserved steel pole has an almost infinite life span

The life span of a wide range of steel poles has been proved by means of life span calculations. These calculations are made by PMF for a standard pole package for the Municipality of Amsterdam due to questions of durability.

zinc is not (!) harmful to people and environment

A hot dip galvanized pole loses zinc due to the fact that raindrops take a minimum amount of zinc into the underlying ground. The poles lose 2 micrometer of the applied zinc (original >80 micrometer) every year. In the past it was assumed that zinc emission was harmful. The State Institute for Health and Environment (Dutch RIVM report 711701078) recently conducted research on zinc emission of hot dip galvanized barriers. The outcome of this research shows that an acting zinc emission is not harmful to people and environment. The biggest zinc emission takes place through agriculture and traffic. A fairly small amount of zinc emission (less than 10%) comes from construction metals like zinc gutters, barriers, lighting poles, steel constructions etcetera. Zinc is recyclable for over 90 % without losing its characteristics. Hot dip galvanizing is and remains a good and reliable protection against corrosion.

Minister Cramer (Ministry of Housing, Spatial Planning and the Environment; VROM) has had recently a meeting with Michael Braungar, the inventor of the cradle-to-cradle concept. Michael Braungar has changed the perspective towards zinc. He feels that zinc can be recycled very well without harming the environment. Even more: zinc is an essential element for humankind, plants and animals. A shortage of zinc can be harmful to human health. Michael Braungar feels that the positive aspects of zinc are forgotten.



producing climate neutral

PMF produces climate neutral and has closed an agreement with the Climate Neutral Group. The emission that is caused during its business gets compensated on a yearly base. In addition PMF leads an active policy to reduce its energy usage.

A steel pole stays a beautiful, but most of all, very sustainable product. A steel pole fits completely into the cradle-to-cradle concept.

Is an aluminum pole also sustainable?

It looks like aluminum has been put on the market as the most sustainable metal. Besides certain positive durability aspects, aluminum is also characterized by a number of striking facts. Did you know that an aluminum smelter uses such an enormous amount of energy for producing the aluminum that these smelters are almost always built in the presence of nuclear plants? When producing nuclear power a huge amount of nuclear waste gets released, also in countries with fewer regulations among nuclear power. In the Netherlands there are two main aluminum smelters. One of these uses almost the entire capacity of the nearby nuclear plant in Borssele. Due to this fact, the nuclear plant can't serve other customers.

Some manufacturers report a 95% degree of recycling for aluminum lighting poles. However, on the market of the aluminum production there is still a lot of excavation of bauxite. The aforesaid percentage does not match with the general ratio between the usage of new and recycled aluminum. This percentage also changes on a daily base. A maintenance free aluminum pole looks great, but what will it look like in 15 to 20 years? Can the aluminum pole on the street be patched up with a good adherent wet paint coating? And will this coated aluminum still be attractive for recycling?

Besides the many positive durability aspects of steel, our steel poles also have other interesting characteristics like:

steel poles are less vulnerable

A steel pole experiences almost no hinder due to vandalism such as bending, tearing or breaking. Moreover, a steel pole is less vulnerable when it comes to a mild collision. The dent sensitivity of a steel pole is low.

steel poles are not sensitive to sour soils

A steel pole is not sensitive to galvanic corrosion. An untreated or slightly damaged aluminum lighting pole is sensitive to galvanic corrosion and vulnerable parts of aluminum poles can disappear or completely dissolve fairly fast.

steel poles are easy to place

A steel pole can be easily placed in a street, due to the fact that one does not have to take into account the risks that can lead to galvanic corrosion.

steel poles have no limitations

Almost every steel pole used in the international road network has been made out of one piece. Long aluminum lighting poles need to be assembled like upside-down ice-cream cones. Steel poles are available in the most diverse lengths, diameters, wall thicknesses, shapes, etcetera.

steel poles are often better priced

A steel pole is often better priced than an aluminum pole. Also when things like life span and residual value are taken into account.

Do you have further questions or would you like more information? We are pleased to inform you about our steel poles and how these can be applied in your road network. Call us for an appointment!



PMF Machinefabriek Bergum B.V.

Mr. W.M.O. van Veenweg 22
NL-9251 GA BURGUM
P.O. Box 13
NL-9250 AA BURGUM

phone +31 (0)511 - 46 38 15

fax +31 (0)511 - 46 42 81

internet www.pmf.nl

internet www.steelpoles.eu

e-mail bergum@pmf.nl

PMF Machinefabriek Veendam B.V.

Ommelanderswijk 185
9644 TG VEENDAM
P.O. Box 290
9640 AG VEENDAM

phone +31 (0)598 - 61 32 90

fax +31 (0)598 - 62 10 89

internet www.pmf.nl

internet www.steelpoles.eu

e-mail veendam@pmf.nl

